**Description**

An in-depth report on the benefits and types of exercise.

**Exercise's Effects on the Lungs:**

Patients with chronic lung

problems have difficulty exercising. Shortness of breath is a major limitation in most patients, but in about a third, muscle fatigue is an even greater problem. Although exercise does not improve lung function, training helps many patients with chronic lung disease by strengthening their limb muscles, thus improving endurance and reducing breathlessness.

**Effects of Exercise on Respiratory Infections (Colds and the Flu)**

In people who already have colds, exercise has no effect on the illness' severity or duration. People should avoid strenuous physical activity when they have fevers, muscle aches, or other symptoms of a widespread viral illness.

**Effects of Exercise on Asthma**

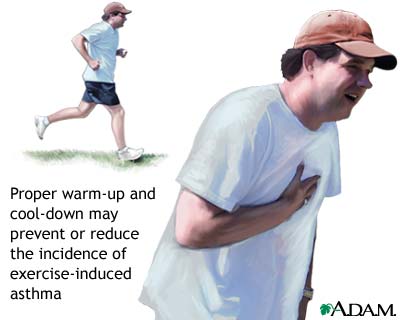
People with asthma who enjoy running should consider using an indoor track, to avoid pollutants and cold winter air. Swimming is particularly excellent for people with asthma. Yoga practice, which uses stretching, breathing, chest expansion, and meditation techniques may have specific benefits that include stress reduction as well as airway opening.

*Exercise-Induced Asthma (EIA).* Exercise-induced asthma occurs when exercise triggers coughing, wheezing, or shortness of breath. It occurs most often in children and young adults and during intense exercise in cold dry air. EIA is triggered *only* by exercise. Unlike allergic asthma, there is no long-term increase in airway activity. People who have only EIA do not require long-term maintenance therapy. The warm-up and cool-down periods, which are important for any exercise regimen, may help reduce EIA events. EIA is not a reason to exclude people from physically demanding occupations.

*Hints for Reducing EIA.* EIA occurs only after exercise and is more likely to occur with regularly-paced activities in cold, dry air. The following are some suggestions for reducing the impact of EIA:

* Follow the health care provider's instructions for using long-term control medications, particularly inhaled corticosteroids, when prescribed.
* Warm-up and cool-down periods are important.
* Patients with EIA might do better with activities that involve short bursts of exercise (tennis, football), rather than with exercises involving long-duration regular pacing (cycling, soccer, and distance running).
* When exercising in cold air, breathing through a scarf or through the nose helps warm up the airways.

Exercise-induced asthma is distinct from allergic asthma in that it does not produce long-term increase in airway activity. People who only experience asthma when they exercise may be able to control their symptoms with preventive measures such as warm-up and cool-down exercises.



**Effects of Exercise on Emphysema**

Walking is the best exercise for people with emphysema. Patients should try to walk three to four times daily for 5 - 15 minutes each time. Devices that assist ventilation may reduce breathlessness that occurs during exercise.

*Strengthening Exercises for the Limbs.* Exercising and strengthening the muscles in the arms and legs helps some patients improve their endurance and reduce breathlessness

Inspiratory muscle training involves exercises and devices that make inhaling (breathing in) more difficult, in order to strengthen breathing muscles. Yoga or martial arts exercises, such as tai chi, which emphasize breathing techniques and balanced movements, may be particularly beneficial for patients with emphysema.

**Resources**

* [http://fitness.gov](http://fitness.gov/) -- The President's Council on Physical Fitness and Sports
* [www.ncppa.org](http://www.ncppa.org/) -- National Coalition for Promoting Physical Activity
* [www.acefitness.org](http://www.acefitness.org/) -- American Council on Exercise
* [www.arthritis.org](http://www.arthritis.org/conditions/exercise/default.asp) -- The Arthritis Foundation offers tips on exercising with arthritis
* [www.justmove.org](http://www.justmove.org/) -- Just Move (American Heart Association)
* [www.nhlbi.nih.gov/health/public/heart/obesity/wecan](http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan) -- We Can! (National Heart, Lung, and Blood Institute)

Source: <http://www.umm.edu/patiented/articles/what_effect_of_exercise_on_chronic_lung_disease_asthma_000029_6.htm#ixzz2MH97AiWY> 

On Fri, Mar 1, 2013 at 9:36 AM, Amy Jones <[amy.e.jones@maine.edu](mailto:amy.e.jones@maine.edu)> wrote:

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On Fri, Mar 1, 2013 at 9:37 AM, Amy Jones <[amy.e.jones@maine.edu](mailto:amy.e.jones@maine.edu)> wrote:

**Description**

An in-depth report on the benefits and types of exercise.

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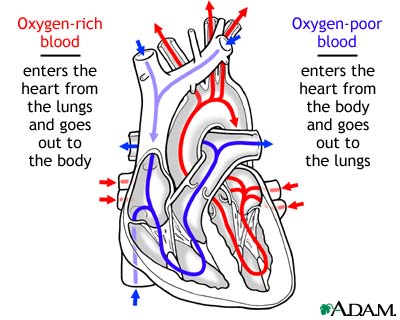
**Exercise's Effects on the Heart:**

Inactivity is one of the major risk factors for heart disease. However, exercise helps improve heart health, and can even reverse some heart disease risk factors.

Like all muscles, the heart becomes stronger as a result of exercise, so it can pump more blood through the body with every beat and continue working at maximum level, if needed, with less strain. The resting heart rate of those who exercise is also slower, because less effort is needed to pump blood.

A person who exercises often and vigorously has the lowest risk for heart disease, but any amount of exercise is beneficial. Studies consistently find that light-to-moderate exercise is even beneficial in people with existing heart disease. Note, however, that anyone with heart disease or cardiac risk factors should seek medical advice before beginning a workout program.

The heart is a large muscular organ that pumps blood throughout the body. Valves inside the heart open and close. This controls how much blood enters or leaves the heart.



**Effects of Exercise on Heart Disease and Cholesterol**

Exercise has a number of effects that benefit the heart and circulation (blood flow throughout the body). These benefits include improving cholesterol and fat levels, reducing inflammation in the arteries, helping weight loss programs, and helping to keep blood vessels flexible and open. Studies continue to show that physical activity and avoiding high-fat foods are the two most successful means of reaching and maintaining heart-healthy levels of fitness and weight.

The American Heart Association recommends that individuals perform moderately-intense exercise for at least 30 minutes on most days of the week. This recommendation supports similar exercise guidelines issued by the Centers for Disease Control and Prevention, and the American College of Sports Medicine.

*Coronary Artery Disease.* People who maintain an active lifestyle have a 45% lower risk of developing heart disease than do sedentary people. Experts have been attempting to define how much exercise is needed to produce heart benefits. Beneficial changes in cholesterol and lipid levels, including lower LDL ("bad" cholesterol) levels, occur even when people performed low amounts of moderate- or high-intensity exercise, such as walking or jogging 12 miles a week. However, more intense exercise is required to significantly change cholesterol levels, notably increasing HDL ("good" cholesterol). An example of this kind of intense program would be jogging about 20 miles a week. Benefits occur even with very modest weight loss, suggesting that overweight people who have trouble losing pounds can still achieve considerable heart benefits by exercising.

Some studies suggest that for the greatest heart protection, it is not the duration of a single exercise session that counts but the total weekly amount of energy expended.

Resistance (weight) training has also been associated with heart protection. It may offer a complementary benefit to aerobics. If you have heart disease or risk factors for heart disease, check with your doctor before starting resistance training.

*Effects of Exercise on Blood Pressure.* Regular exercise helps keep arteries elastic (flexible), even in older people. This, in turn, ensures good blood flow and normal blood pressure. Sedentary people have a 35% greater risk of developing high blood pressure than physically active people do.

[http://www.umm.edu/graphics/tnail/18166t.jpg](http://www.umm.edu/patiented/articles/untreated_hypertension_000295.htm)

Click the icon to see the risks associated with untreated hypertension.

It should be noted that high-intensity exercise may not lower blood pressure as effectively as moderate-intensity exercise. In one study, moderate exercise (jogging 2 miles a day) controlled high blood pressure so well that more than half the patients who had been taking drugs for the condition were able to discontinue their medication.

Experts recommend at least 30 minutes of exercise on most -- if not all -- days. Studies show that yoga and tai chi, an ancient Chinese exercise involving slow, relaxing movements, may lower blood pressure almost as well as moderate-intensity aerobic exercises.

[http://www.umm.edu/graphics/tnail/19301t.jpg](http://www.umm.edu/patiented/articles/yoga_000374.htm)

Click the icon to see an image of someone practicing yoga.

Anyone with existing high blood pressure should discuss an exercise program with their doctor. Before starting to exercise, people with moderate-to-severe high blood pressure should lower their blood pressure, and be able to control it with medications. Everyone, especially people with high blood pressure, should breathe as normally as possible through each exercise. Holding the breath increases blood pressure.

*Effects of Exercise on Heart Failure.* Traditionally, heart failure patients have been discouraged from exercising. Now, exercise performed under medical supervision is proving to be helpful for select patients with stable heart failure.

Progressive resistance training may be particularly useful for heart failure patients, since it strengthens muscles, which commonly weaken in this disorder. Simply performing daily handgrip exercises can improve blood flow through the arteries.

Experts warn, however, that exercise is not appropriate for all heart failure patients.

**Effects of Exercise on Stroke**

Physical activity lowers stroke risk.

All stroke survivors should have a medical evaluation before starting an exercise program.

The effects of exercise on stroke are less established than those on heart disease, but most studies show benefits.

**Exercise Programs for High-Risk Individuals**

Anyone with heart disease or risk factors for developing heart disease or stroke should seek medical advice before beginning a workout program. Patients with heart disease can nearly always exercise safely as long as they are evaluated beforehand. Some will need to begin their workout under medical supervision. Still, it is often difficult for a doctor to predict health problems that might arise as the result of an exercise program. At-risk individuals should be very aware of any symptoms warning of harmful complications while they exercise.

Some believe that anyone over 40 years old, whether or not they are at risk for heart disease, should have a complete physical examination before starting or intensifying an exercise program. Some doctors use a questionnaire for people over 40 to help determine whether they require such an examination. The questions they use are as follows:

* Has any doctor previously recommended medically supervised activity because of a heart condition?
* Does physical activity bring on chest pain?
* Has chest pain occurred during the previous month?
* Does the person faint or fall over from dizziness?
* Does bone or joint pain intensify during or after exercise?
* Has medication been prescribed for hypertension (high blood pressure) or heart problems?
* Is the person aware of, or has a doctor suggested, any physical reason for not exercising without medical supervision?

Those who answer "yes" to any of the above questions should have a complete medical examination before developing an exercise program.

Some people should get a full evaluation and a stress test.

*Stress Test.* A stress test helps determine the risk for a heart problem resulting from exercise. Anyone with a heart condition or history of heart disease should have a stress test before starting an exercise program. Some health care professionals also recommend this test before a vigorous exercise program for older persons who are sedentary, even in the absence of known or suspected heart disease. The test is expensive, however. Many physicians believe that it may not be necessary for older people who start low intensity exercise such as walking, and have no evident health problems or risk factors.

**Heart Attack and Sudden Death from Strenuous Exercise**

A small percentage of heart attacks occur after heavy physical work.

*High-Risk Individuals.* In general, the following people should avoid intense exercise or start it only with careful monitoring:

* People who have certain medical conditions: These conditions include uncontrolled diabetes, uncontrolled seizures, uncontrolled high blood pressure, a heart attack within the previous 6 months, heart failure, unstable angina, significant aortic valve disease, or aortic aneurysm.
* People with moderate-to-severe hypertension: Moderate or severe high blood pressure (systolic blood pressure over 160 mm Hg or diastolic (lower number) pressure over 100 mm Hg) should be brought to lower levels before a person starts a vigorous exercise program.
* Sedentary people should be cautious.
* Episodes of exercise-related sudden death in young people are rare but of great concern. Some are preceded by fainting, which is due to a sudden and severe drop in blood pressure. It should be noted that fainting is relatively common in athletes, and is dangerous only in people with existing heart conditions. Young people with genetic or congenital (present at birth) heart disorders should avoid intensive competitive sports.
* Anabolic steroids or products containing ephedra have been associated with cases of stroke, heart attack, and even death.

The risk for heart attack from exercise should be kept in perspective, however. Some form of exercise, carefully personalized, has benefits for most of the individuals mentioned above. In many cases, particularly when the only risk factors are a sedentary lifestyle and older age, exercise can often be increased over time until it is intense.

*Hazardous Activities for High-Risk Individuals.* The following activities may pose particular dangers for high-risk individuals:

* Intense workouts may be particularly hazardous for people with risk factors for heart disease, especially older people. Examples of intense workouts include snow shoveling, running, race walking, tennis, heavy lifting, heavy gardening. These workouts tend to stress the heart, raise blood pressure for a brief period, and may cause spasms in the arteries leading to the heart. (See image: *Coronary Artery Spasm*)
* Some studies suggest that competitive sports, which couple intense activity with aggressive emotions, are more likely to trigger a heart attack than other forms of exercise.

*Listening for Warning Signs.* It should be noted that according to one study, at least 40% of young men who die suddenly during a workout have previously experienced, and ignored, warning signs of heart disease. In addition to avoiding risky activities, the best preventive tactic is simply to listen to the body and seek medical help at the first sign of symptoms during or following exercise. These symptoms include the following:

* Irregular heartbeat
* Shortness of breath
* Chest pain

[http://www.umm.edu/graphics/tnail/18130t.jpg](http://www.umm.edu/patiented/articles/coronary_artery_spasm_000287.htm)

Click the icon to see an image of a coronary artery spasm.

[http://www.umm.edu/graphics/tnail/18054t.jpg](http://www.umm.edu/patiented/articles/stable_angina_000263.htm)

Click the icon to see an image of stable angina.

**Resources**

* [http://fitness.gov](http://fitness.gov/) -- The President's Council on Physical Fitness and Sports
* [www.ncppa.org](http://www.ncppa.org/) -- National Coalition for Promoting Physical Activity
* [www.acefitness.org](http://www.acefitness.org/) -- American Council on Exercise
* [www.arthritis.org](http://www.arthritis.org/conditions/exercise/default.asp) -- The Arthritis Foundation offers tips on exercising with arthritis
* [www.justmove.org](http://www.justmove.org/) -- Just Move (American Heart Association)
* [www.nhlbi.nih.gov/health/public/heart/obesity/wecan](http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan) -- We Can! (National Heart, Lung, and Blood Institute)

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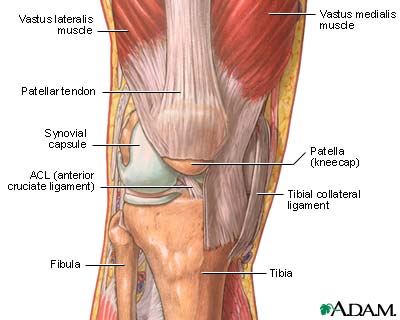
An in-depth report on the benefits and types of exercise.

**Exercise's Effects on Bones and Muscles:**

Exercise is critical for strong muscles and bones. Muscle strength declines as people age, but studies report that when people exercise they are stronger and leaner than others in their age group.

Exercise may help kids lower their risk of chronic pain in the future.

Joints are complex structures. They are designed to bear weight and move the body. Above the knee is the femur (thigh bone). Below the knee is the tibia (shin bone) and fibula. The kneecap is also called the patella. It rides on top of the lower portion of the femur and the top portion of the tibia. The muscles and ligaments connect these bones, and the space between them is cushioned by fluid-filled capsules (synovia) and cartilage. When you exercise, the muscles pull on the bones, strengthening them. The range of motion of a joint represents how far it can be flexed (bent) and extended (stretched).



**Effects of Exercise on Osteoarthritis**

Joints require motion to stay healthy. Long periods of inactivity cause the arthritic joint to stiffen and the adjoining tissue to weaken. A moderate exercise program that includes low-impact aerobics, power, and strength training has benefits for osteoarthritic patients, even if exercise does not slow down the disease progression. Many patients who start an exercise program report less disability and pain. They are also better able to perform daily chores, and remain independent longer than their inactive peers. Older patients and those with medical problems should always check with their doctor before starting an exercise program.

[http://www.umm.edu/graphics/tnail/17285t.jpg](http://www.umm.edu/patiented/articles/osteoporosis_000233.htm)

Click the icon to see an image of osteoporosis.

The following are useful exercises for osteoarthritis patients:

* Strengthening exercises build muscle strength. Exercises to strengthen leg muscles are a reasonable first step, even before using pain relievers. Health care professionals fear that patients who rely on painkilling drugs may overuse knees, which do not have strong enough muscle tissue to protect the joints from further damage. Strengthening the thigh muscles is certainly protective for those who have not developed osteoarthritis.
* Range-of-motion exercises increase the amount of movement in a joint and muscle. Examples are yoga and tai chi, which focus on flexibility, balance, and proper breathing.
* Low-impact aerobic workouts help stabilize and support the joints. Cycling and walking are beneficial, and swimming or exercising in water is highly recommended for people with arthritis. Patients with arthritis should avoid high-impact sports, such as jogging, tennis, and racquetball.
* Some researchers are now focusing on "power" training, which involves improving the muscle's ability to move more rapidly against resisting forces, such as gravity. For example, such training helps people stand up or climb stairs more quickly. Muscle power declines more rapidly than muscle strength, and may be particularly important in older people.

**Exercises Effect on Fractures and Falls**

Exercise is very important for slowing the progression of osteoporosis, and extremely important for reducing the risk of falling, which causes fractures. Falls are one of the leading causes of death in people over the age of 65. Exercise helps build balance and flexibility, which reduces the risk of falling.

Specific exercises may be especially helpful for reducing the risk of fractures:

* Weight-bearing exercise is very beneficial for bones in people of all ages, including older people. This approach applies tension to muscle and bone, and the body responds to this stress by increasing bone density, in young adults by as much as 2 - 8% a year. Careful weight training can also be very beneficial for elderly people, particularly women. In addition to improving bone density, weight-bearing exercise reduces the risk of fractures by improving muscle strength and balance, thus helping to prevent falls.
* Regular brisk long walks improve bone density and mobility. In one 2002 study, for example, older women reduced their risk of hip fracture by over 40% by working out just four hours a week.
* Exercises specifically targeted to strengthen the back can be beneficial in improving posture, and may even reduce kyphosis (hunchback) in people with osteoporosis.
* Low-impact exercises, particularly yoga and tai chi, which improve balance and strength, have been found to decrease the risk of falling. In one study, tai chi reduced this risk by almost half.

[http://www.umm.edu/graphics/tnail/19081t.jpg](http://www.umm.edu/patiented/articles/bone-building_exercise_000305.htm)

Click the icon to see an image of the bone-building exercise.

*Note on Female Athlete Triad.* Some young female athletes who exercise very intensely, and are subject to intense pressure to remain thin, are at risk for the female athlete triad. This syndrome is a combination of three disorders -- an eating disorder, loss of menstrual periods, and osteoporosis.

**Effect of Exercise on Back Pain**

People who do not exercise regularly face an increased risk for low back pain, especially during times when they suddenly have to perform stressful, unfamiliar activities. These activities may include shoveling, digging, or moving heavy items. Although no definitive studies have been done to prove the relationship between lack of exercise and low back pain, sedentary living is probably a contributing risk factor for this condition.

Lack of exercise leads to the following conditions that may threaten the back:

* Muscle inflexibility can restrict the back's ability to move, rotate, and bend.
* Weak stomach muscles can increase the strain on the back and can cause an abnormal tilt of the pelvis (hip bones).
* Weak back muscles may increase the load on the spine and the risk of disk compression.
* Obesity puts more weight on the spine and increases pressure on the vertebrae and disks. Studies report only a weak association between obesity and low back pain, however.

*Benefits for Chronic Back Pain.* People with sudden and severe back pain should not exercise. Exercise plays a very beneficial role in relieving chronic back pain, however.

Exercise should be considered as part of a broader program to return to normal home, work, and social activities. In this way, the positive benefits of exercise not only affect strength and flexibility but they also alter and improve the patients' attitudes toward their disability and pain.

Repetition is the key to increasing flexibility, building endurance, and strengthening the specific muscles needed to support the spine. Some exercise programs used for prevention or treatment of chronic low back pain include the following:

* Low-impact Aerobic Exercises: Low-impact aerobic exercises, such as swimming, bicycling, and walking, can strengthen muscles in the abdomen and back without over-straining the back. Programs that use strengthening exercises while swimming may be a particularly beneficial approach for many patients with back pain..
* Lumbar Extension Strength Training: Exercises called lumbar extension strength training are proving to be effective. Generally, these exercises attempt to strengthen the abdomen, and improve lower back mobility, strength, and endurance. They also enhance flexibility in the hip and hamstring muscles, and in the tendons at the back of the thigh.
* Yoga, Tai Chi, and Chi Kung: These exercises combine low-impact physical movements and meditation. They are based on principles of disciplining the mind to achieve a physical and mental balance, and can be very helpful in preventing recurrences of low back pain. This approach deserves further research.
* Flexibility Exercises: Whether flexibility exercises alone offer any significant benefit for chronic back pain is uncertain.
* Retraining Deep or Core Muscles: Studies are finding a link between low back pain and poor motor control of deep muscles in the back and trunk. According to these studies, contraction exercises specifically designed to retrain these muscles may be effective for patients with both acute and chronic pain.

It is important for any person who has low back pain to have an exercise program guided by professionals who understand the limitations and special needs of back pain, and who can address individual health conditions.

*Hazardous Effects on the Back.* Improper or excessive exercise can also cause back pain.

**Resources**

* [http://fitness.gov](http://fitness.gov/) -- The President's Council on Physical Fitness and Sports
* [www.ncppa.org](http://www.ncppa.org/) -- National Coalition for Promoting Physical Activity
* [www.acefitness.org](http://www.acefitness.org/) -- American Council on Exercise
* [www.arthritis.org](http://www.arthritis.org/conditions/exercise/default.asp) -- The Arthritis Foundation offers tips on exercising with arthritis
* [www.justmove.org](http://www.justmove.org/) -- Just Move (American Heart Association)
* [www.nhlbi.nih.gov/health/public/heart/obesity/wecan](http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan) -- We Can! (National Heart, Lung, and Blood Institute)

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